Work Sheet- 2 (22.06.2020)
Class– Ten
Chapter- 9
Exercise- 9.1
Trigonometric Ratio

Creative Multiplication Choice Questions

1. **If $\sec\theta + \tan\theta = \frac{1}{2}$ then $\sec\theta - \tan\theta$ = What?**

a) $\frac{1}{4}$ b) $\frac{1}{3}$

c) $\frac{1}{9}$ d) 2

2. **Observe the following statement—**

i. The value of $2 - (1 - \cot^2\theta)$ is cosec2θ.

ii. $\sin^2\theta + 2 = 3 - \cos^2\theta$

iii. $\frac{\text{cosec}\theta}{\sin\theta} - \sec\theta\cos^2\theta\,\text{cosec}^2\theta = 2$

Which one of the following is correct?

a) i and ii b) i

c) ii d) iii

3. **Observe-**

i. $\tan A + \cot A = \sec A . \text{cosec}\, A$

ii. $\tan^2 A = \sec^2 A - 1$

iii. $\frac{\tan A}{\sec A + 1} - \frac{\sec A - 1}{\tan A} = 1$

Which one of the following is correct?

a) i and ii b) ii and iii

c) i and iii d) i, ii and iii

4. **For a trigonometric relation-**

i. $\sin(90 - \theta) = \sin\theta$

ii. $\text{cosec}^2\theta - \cot^2\theta = 1$

iii. $\sin^2\theta + \cos^2\theta = 1$

Which one of the following is correct?

a) i and ii b) ii and iii

c) i and iii d) i, ii and iii

∠B is a right angle of a right-angle triangle ABC and tanA = 1.

Answer to the question no. (5 – 6) according to the information:

5. **What is the value of sin2A?**

a) 1 b) 0

c) $\frac{1}{2}$ d) $\frac{1}{\sqrt{2}}$

6. **What is the value of two angles?**

a) 45°, 45° b) 30°, 45°

c) 45°, 30° d) 30°, 30°

In ΔABC, ∠B = 1 right angle, AB = 2 unit and AC = 3 unit then answer questions no. (7 – 8):

7. **cosecC = What?**

a) $\frac{3}{\sqrt{5}}$ b) $\frac{\sqrt{5}}{3}$

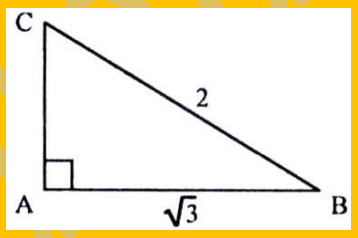
c) $\frac{3}{2}$ d) $\frac{2}{3}$

8. **cotA = What?**

a) $\frac{2}{\sqrt{5}}$ b) $\frac{\sqrt{5}}{2}$

c) $\frac{3}{2}$ d) $\frac{2}{3}$

According to the figure answer the questions No. (59 – 60):



9. **What is the value of sinB.cosC?**

a) 1 b) $\frac{1}{4}$

c) $\frac{\sqrt{3}}{4}$ d) 4

10. **What is the value of $\frac{tan^2C - 1}{tan^2B + 1}$?**

a) $-\frac{1}{6}$ b) $\frac{1}{2}$

c) $\frac{3}{2}$ d) $\frac{8}{3}$

11. **From which language the word 'TRIGONOMETRY' has been originated?**

a) Greek b) Latin

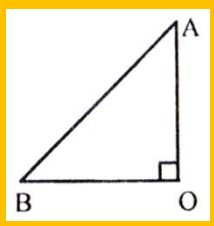
c) Chinese d) English

12. **Which of the following is the opposite side of right angle of a right-angled triangle?**

a) Hypotenuse b) Base

c) Height d) Perpendicular

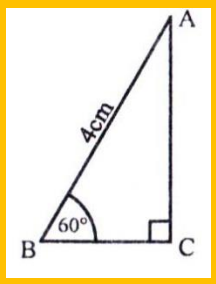
13.



Which of the following is the height of the right-angled triangle AOB?

a) BO b) AB
c) AB + AO d) OA

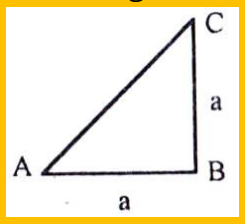
14.



What is the length of BC in ΔABC?

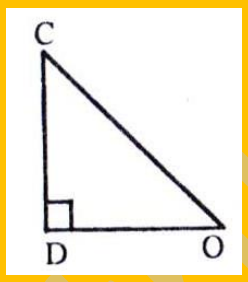
a) 2 cm b) $2\sqrt{3}$ cm
c) $3\sqrt{2}$ cm d) $\frac{2}{\sqrt{3}}\ cm$

15. What is the length of AC in ΔABC?



a) $2a^2$ b) $\sqrt{2}a$
c) $\sqrt{2a}$ d) 2a

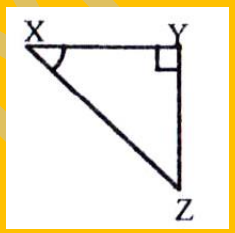
16.



Which of the following is the adjacent side of in the above figure of $\angle OCD$?

a) CD b) OC
c) DO d) CD + CO

17.



In the above figure which of the following is the opposite side of ∠ZXY?

a) YZ b) XZ
c) YX d) XY + YZ

18. In ΔOPN if ∠N = 90° then which of the following is the opposite side of ∠OPN?

a) PN b) ON
c) PO d) OP + PN

19. If a right-angled triangle is constructed by the sides 24cm, 25cm and 7cm then which of the following will be the hypotenuse?

a) 7 b) 24
c) 25 d) 49

20. If 15cotA = 8 then what is the value of secA?

a) $\frac{15}{17}$ b) $\frac{17}{8}$
c) $\frac{8}{17}$ d) $\frac{3}{17}$

21. If the sides of a right-angled triangle are 36 cm, 27 cm and 45cm.

i. Hypotenuse of it is 45 cm.
ii. Addition of adjacent and opposite sides is equal to the hypotenuse.
iii. Addition of two sides except hypotenuse is 63 cm.

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

22. If two sides of right-angled triangle with opposite side 8 cm are 17 cm and 15 cm.

i. Length of adjacent side is 17 cm.
ii. Area of the square constructed on hypotenuse is 289 square cm.
iii. Difference between opposite side and hypotenuse is 9 cm.

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

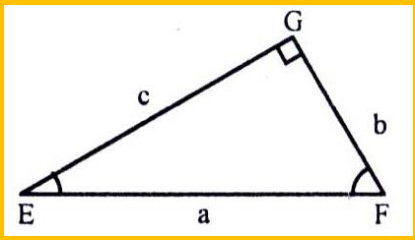
23. If ΔABC is an isosceles right-angled triangle and ∠B = 90°.

i. $\angle A = 45°$
ii. AB = AC
iii. $\angle C = 45°$

Which one of the following is correct?

a) i and ii b) i and iii
c) ii and iii d) i, ii and iii

24.



If ΔABC is an isosceles right-angled triangle and ∠B = 90°.

i. $a = \sqrt{b^2 + c^2}$

ii. The adjacent side of ∠F is b.

iii. The adjacent side of ∠E is a.

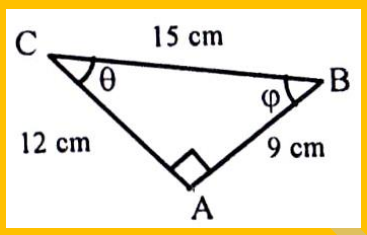
Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

Answer to the questions No. (25 - 27) using the following information:

In the right-angled triangle ABC, $\angle C = \theta, \angle B = \phi$, AB = 9 cm, BC = 15 cm and AC = 12 cm.



25. What is the length of opposite side in cm of angle θ?

a) 15 b) 12

c) 9 d) 3

26. For which of the following angle the length of adjacent side is 12 cm?

a) θ b) θ + ∅

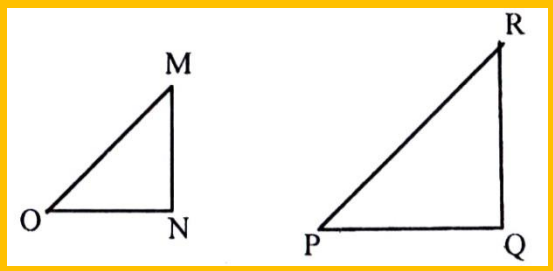
c) ∅ d) ∅ − θ

27. What is the length of the hypotenuse in cm of angle ∅?

a) 9 b) 10

c) 12 d) 15

28.

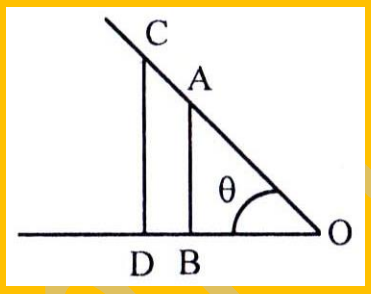


Under which of the following condition ∠OMN and ∠PRQ are will be similar right angle?

a) $\frac{OM}{PR} = \frac{ON}{PQ}$ b) $\frac{MO}{PR} = \frac{MN}{PQ}$

c) $\frac{OM}{PR} = \frac{NO}{QR}$ d) $\frac{MN}{PQ} = \frac{MO}{RQ}$

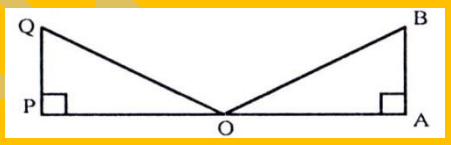
29. For which of the following condition the ratio of the sides of ΔAOB and ΔCOD will be constant?



a) $\frac{AB}{OA} = \frac{CD}{DO}$ b) $\frac{AB}{CD} = \frac{OB}{OD}$

c) $\frac{CD}{AB} = \frac{DO}{OA}$ d) $\frac{OA}{OB} = \frac{AD}{BC}$

30.



And if $\frac{PQ}{PO} = \frac{AB}{AO}$ then -

i. ΔPOQ and ΔOAB are similar.

ii. PQ. OB = AB. OQ

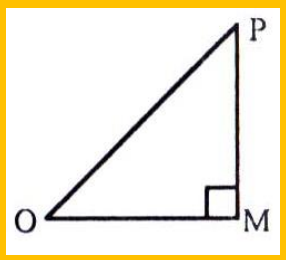
iii. $\frac{PO}{QO} = \frac{AO}{BO}$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

31.



In ΔPOM if ∠PMO = 90° then —

i. $\frac{PM}{OP} < 1$

ii. $\frac{OM}{OP} < 1$

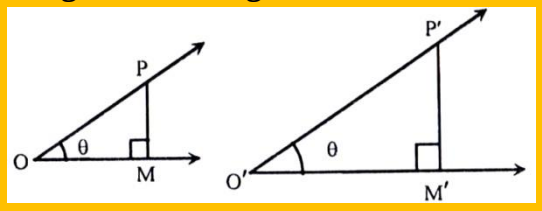
iii. $\frac{PM}{OP} > 1$

Which one of the following is correct?

a) i and ii b) ii and iii

c) i and iii d) i, ii and iii

Answer to the questions No. (32 – 33) using the following information:



The right-angled triangle POM and P'O'M' are similar.

32. **If $\sin\theta = x$ in ΔPOM then what is the value of $\cos\theta$ in $P'O'M'$?**

a) x b) $-x^2$

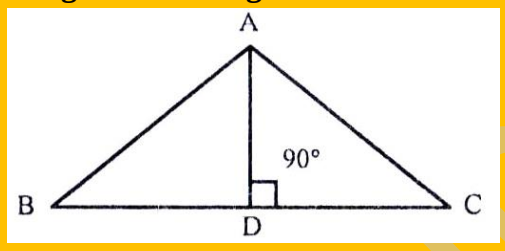
c) $\sqrt{x}$ d) $\sqrt{1-x^2}$

33. **Under which case they are similar?**

a) $\frac{OP}{O'P'} = \frac{PM}{O'M'}$ b) $\frac{OP}{O'P'} = \frac{P'M'}{OM}$

c) $\frac{OM}{O'M'} = \frac{PM}{P'M'}$ d) $\frac{PM}{O'M'} = \frac{OP}{O'M'}$

Answer to the questions No. (34 - 55) using the following information:



34. **If $\frac{AB}{BD} = \frac{AC}{CD}$ then which of the following is correct?**

a) $\Delta ABD = \Delta ACD$

b) ΔABD *and* ΔACD are similar.

c) $\Delta ABD < \Delta ACD$

d) $\Delta ABD > \Delta ACD$

35. **If ΔABD and ΔACD are similar then which of the following is correct?**

a) $AB = AC$ b) $AB.AC = AD^2$

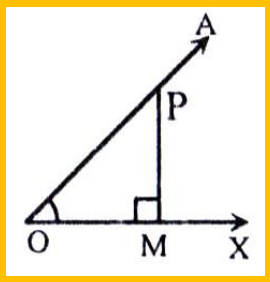
c) $AD^2 = \frac{AB}{AC}$ d) $AD^2 = \frac{AC}{AB}$

36. **$AB^2 - AC^2$ = What?**

a) BD^2 b) CD^2

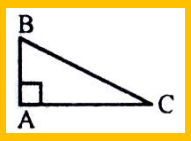
c) $BD^2 - CD^2$ d) $CD^2 - BD^2$

37. **In the figure besides, right angled ΔPOM Considering $\angle XOA = \theta$ then how many numbers are there for trigonometric ratio of angle θ?**



a) 6 b) 5

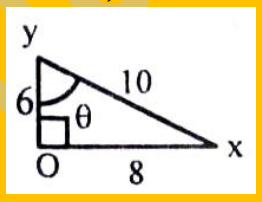
c) 4 d) 3

38. **If** 

and $\cos\theta = \frac{AB}{BC}$ then θ = What?

a) $\angle ABC$ b) $\angle ACB$

c) $\angle BAC$ d) $\angle ABC + \angle ACB$

39. **If the figure** 

and $\cot\theta$ = What?

a) $\frac{3}{4}$ b) $\frac{4}{3}$

c) $\frac{3}{5}$ d) $\frac{4}{5}$

40. **Which of the following condition is correct to construct angle of 45°?**

a) Perpendicular > Base

b) Base = Perpendicular

c) $Base < Perpendicular$

d) Base > Perpendicular

41. **Which of the following is the ratio of tangent of angle θ?**

a) $\frac{\text{Adjacen side}}{\text{Opposite side}}$

b) $\frac{\text{Opposite side}}{\text{Hypotenuse}}$

c) $\frac{\text{Hypotenuse}}{\text{Opposite side}}$

d) $\frac{\text{Opposite side}}{\text{Adjacent side}}$

42. **Which of the following is the relation between $\sin\theta$ and $\text{cosec}\theta$?**

a) $\sin\theta = \text{cosec}\theta$

b) $\sin\theta + \text{cosec}\theta = 1$

c) $\sin\theta.\text{cosec}\theta = 1$

d) $\frac{1}{\sin\theta} + \frac{1}{\text{cosec}\theta} = 1$

43. **Which of the following is the value of $\tan\theta.\cot\theta.\cos\theta$?**

a) $\frac{\text{Perpendicular}}{\text{Hypotenuse}}$ b) $\frac{\text{Perpendicular}}{\text{Base}}$

c) $\frac{\text{Hypotenuse}}{\text{Base}}$ d) $\frac{\text{Base}}{\text{Hypotenuse}}$

44. If opposite side, adjacent side and hypotenuse of right-angled triangle PMO arc PM, OM and OP—

i. $\sin\theta = \frac{\text{Opposite side}}{\text{Hypotenuse}} = \frac{\text{PM}}{\text{OP}}$

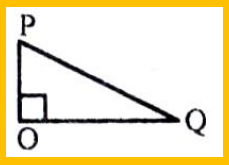
ii. $\cos\theta = \frac{\text{Adjacent side}}{\text{Hypotenuse}} = \frac{\text{OM}}{\text{OP}}$

iii. $\tan\theta = \frac{\text{Opposite side}}{\text{Adjacent side}} = \frac{\text{PM}}{\text{OM}}$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii



45. If and $\tan\theta = \frac{OQ}{OP}$ then θ = What?

i. $\theta = \angle OPQ$

ii. $\cot\theta = \frac{OP}{OQ}$

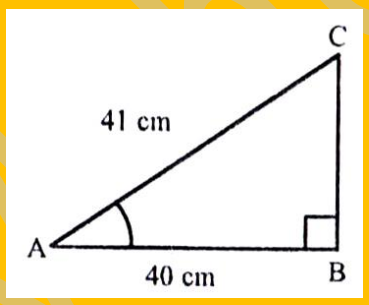
iii. $\tan\theta \cot\theta = 1$

Which one of the following is correct?

a) i and ii b) i and iii

c) ii and iii d) i, ii and iii

Answer to the questions (46 - 48) using the following figure:



46. What is the value of BC in cm?

a) 9 b) 29

c) 39 d) 49

47. What is the value of $\sin\angle BAC$?

a) $\frac{9}{40}$ b) $\frac{81}{40}$

c) $\frac{9}{41}$ d) $\frac{81}{41}$

48. What is the value of $\tan\angle BAC$?

a) $\frac{9}{40}$ b) $\frac{9}{41}$

c) $\frac{40}{41}$ d) $\frac{41}{40}$

49. If $\sin\theta = \frac{\sqrt{3}}{2}$ and $\sec\theta = 2$ then $\tan\theta$ = What?

a) $3\sqrt{3}$ b) $6\sqrt{2}$

c) $9\sqrt{2}$ d) $\sqrt{3}$

50. If $\sin\theta = \frac{\sqrt{3}}{2}$ and $\frac{1}{\cos\theta} = 2$ then $\tan\theta$ = What?

a) $3\sqrt{3}$ b) $6\sqrt{2}$

c) $9\sqrt{2}$ d) $\sqrt{3}$

Creative Questions:

1. $2\cos(A+B) = 1 = 2\sin(A-B)$, $\cot\theta + \cos\theta = m$ and $\cot\theta - \cos\theta = n$. **[D.B.- 19]**

a) If $\tan C = \frac{3}{4}$ then find the value of sec C.

b) Determine the value of $cosec\ 2A$.

c) Prove that, $m^2 - n^2 = 4\sqrt{mn}$.

2. secB = x, tanB = y and $\text{cosecA} - \text{cotA} = \frac{4}{3}$ where A and B are acute angle. **[Dj.B.- 19]**

a) If $\text{cosec}\theta = 2$ then find the value of θ.

b) If $\frac{x-y}{x+y} = \frac{2-\sqrt{3}}{\sqrt{3}+2}$ then show that, $B = 60°$.

c) Determine the value of $(\sin A + \cos A)$ from the information given in the stem.

3. $\angle C$ is the right angle of a triangle ABC tanB = $\sqrt{3}$. **[All B.- 18]**

a) Find the length of AB.

b) According to the stem prove that, $\frac{\cot A + \tan B}{\cot B + \tan A} = \cot A \tan B$.

c) If $\angle B = m + n$ and $\angle A = m - n$ then find the value of *m* and *n*.

4. tanA + sinA = m and tanA − sinA = n. **[C.B.- 16]**

a) Prove that, $\tan^2 A \,.\, \sin^2 A = mn$.

b) Show that, $m^2 - n^2 = 4\sqrt{mn}$.

c) Prove that, $\sec A = \sqrt{mn}.\, cosec^2 A$.

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